

What is claimed is:

1. A low-profile package for housing an optoelectronic device, comprising:
an insulating base having an upper surface, wherein an optoelectronic device is mounted to the upper surface of the insulating base;
a metal member having a top wall and a bottom wall, wherein the bottom wall of the metal member is attached to the upper surface of the insulating base; and
a substantially flat metal cover attached to the top wall of the metal member to hermetically seal the metal cover to the insulating base.
2. The low-profile package of claim 1, further including an integrated circuit mounted adjacent to the optoelectronic device on the upper surface of the insulating base, wherein the integrated circuit is electrically connected to the optoelectronic device.
3. The low-profile package of claim 1, wherein the metal member has a thickness ranging from approximately 0.5 mm to approximately 2 mm.
4. The low-profile package of claim 1, further including a first metal layer disposed on the upper surface of the insulating base.
5. The low-profile package of claim 4, further including a second metal layer disposed on a lower surface of the insulating base, wherein each of the first and second metal layers includes a pattern of conductive paths.
6. The low-profile package of claim 5, further including at least one electrical lead attached to the lower metallized surface of the insulating base, wherein the at least one electrical lead is adapted to electrically communicate signals from the optoelectronic device housed inside the low-profile package to components located external to the low-profile package.
7. The low-profile package of claim 5, further including an upper adhesive layer disposed on the upper surface of the insulating base, wherein the metal member is attached to the upper metallized surface of the insulating base via the upper adhesive layer.

8. The low-profile package of claim 7, wherein the upper adhesive layer includes one of a solder preform layer and a brazing material.

9. The low-profile package of claim 1, wherein the insulating base is a multilayer base comprising metal layers located at a plurality of levels of the base and electrically connected together.

10. The low-profile package of claim 1, further including a submount attached to the upper surface of the insulating base, wherein the optoelectronic device is mounted to the submount.

11. The low-profile package of claim 1, further including a heat dissipating device attached to the insulating base.

12. The low-profile package of claim 1, wherein the insulating base comprises a ceramic material.

13. The low-profile package of claim 1, wherein the insulating base has a polygonal shape.

14. The low-profile package of claim 1, wherein the metal member further includes an outer wall and an inner wall that extend along a perimeter of the insulating base, wherein the optoelectronic device is located within an inner region of the metal member.

15. The low-profile package of claim 14, wherein the metal member is a sealing ring extending around a circumference of the upper surface of the insulating base, wherein the sealing ring includes one of a circular cross-sectional shape between the outer wall and the inner wall or an oval cross-sectional shape between the outer wall and inner wall.

16. The low-profile package of claim 14, wherein the metal member has a polygonal shape between the outer wall and the inner wall.

17. The low-profile package of claim 1, wherein the substantially flat metal cover includes a transparent portion.

18. The low-profile package of claim 1, wherein the optoelectronic device is adapted to operate at a speed of at least 10 Gbps.

19. A method for hermetically sealing a substantially flat metal cover to an insulating base, comprising:

attaching a bottom wall of a metal member to an upper surface of the insulating base;

mounting an optoelectronic device to the upper surface of the insulating base, wherein the optoelectronic device is located within an inner region of the metal member;

positioning the substantially flat metal cover over the optoelectronic device; and

attaching the substantially flat metal cover to a top wall of the metal member to hermetically enclose the optoelectronic device.

20. The method of claim 19, further including mounting an integrated circuit adjacent to the optoelectronic device on the upper surface of the insulating base, wherein the integrated circuit is electrically connected to the optoelectronic device, and wherein both the optoelectronic device and the integrated circuit are located within the inner region of the metal member.

21. The method of claim 19, further including forming a first metal layer on the upper surface of the insulating base, wherein the bottom wall of the metal member is attached to the upper metallized surface of the insulating base.

22. The method of claim 21, further including attaching the metal member to the insulating base using an upper adhesive layer located between the bottom wall of the metal member and the upper metallized surface of the insulating base.

23. The method of claim 21, further including:

forming a second metal layer on a lower surface of the insulating base; and

patterning both the first and second metal layers to include a plurality of conductive paths.

24. The method of claim 23, further including:

attaching at least one electrical lead to the lower metallized surface of the insulating base; and

electrically communicating signals from the optoelectronic device to components located outside of the substantially flat metal cover via the at least one electrical lead.

25. An automated process for manufacturing a low-profile package, wherein the low-profile package is adapted to house an optoelectronic assembly, the automated process comprising:

providing an insulating substrate having an upper surface and a lower surface, wherein the insulating substrate includes a plurality of vias formed through the upper and lower surfaces of the insulating substrate, and wherein the plurality of vias is filled with a conductive material;

forming a metallization layer on each of the upper and lower surfaces of the insulating substrate;

attaching a metal sealing ring to the upper metallized surface of the insulating substrate;

mounting the optoelectronic assembly to the upper metallized surface of the insulating substrate and within an inner region of the metal sealing ring, wherein the optoelectronic assembly includes at least one optical device;

aligning a substantially flat metal cap over the optoelectronic assembly; and

sealing the substantially flat metal cap to the insulating substrate to hermetically enclose the optoelectronic assembly.

26. The automated process of claim 25, wherein sealing the substantially flat metal cap to the insulating substrate includes hermetically sealing the substantially flat metal cap to the metal sealing ring attached to the insulating substrate using a resistance welding technique.

27. A packaged optical module, comprising:

a base formed of an electrically insulating material and having at least a first surface and a second surface, wherein an optical device is mounted to the first surface of the base;

a sealing member formed of an electrically conducting material and attached to the first surface of the base, wherein the sealing member extends along a perimeter of the base with the optical device being located within an inner region of the sealing member;

a heat dissipating device attached to the second surface of the base; and

a substantially flat cover formed of the electrically conducting material, wherein the substantially flat cover is attached to the sealing member on the base to provide a hermetic enclosure for the optical device.

28. The packaged optical module of claim 27, further including an electronic circuit mounted to the first surface of the base and electrically connected to the optical device, wherein the electronic circuit is located within the inner region of the sealing member.

29. The packaged optical module of claim 28, further including at least one other component mounted to the first surface of the base, wherein the substantially flat cover provides a hermetic enclosure for the optical device, the electronic circuit, and the at least one other component.

30. The packaged optical module of claim 27, wherein the sealing member has a thickness ranging from approximately 0.5 mm to approximately 2 mm.